

OLD COUNTY ROAD CORRIDOR STUDY

JANUARY 2005

NEW
CASTLE
COUNTY



EXECUTIVE SUMMARY

As part of a 20-Year Transportation Plan for the Route 40 Corridor, adopted in June 2000, sidewalks were recommended along Old County Road from Frazer Road to Glasgow Avenue. However, recent issues raised by local residents, civic associations and legislators have demonstrated the need for additional study along this segment of Old County Road. Those concerns led to the following resolution, which was part of the Bond Bill (HB #550) passed by the General Assembly in July 2004:

Due to increased traffic volume in Pencader Hundred with the resultant traffic congestion and public safety concerns, DelDOT shall initiate a study of Old County Road from Glasgow Avenue to Frazer Road. The study shall include ideas for potential alternatives for road improvements. A report shall be made to the Bond Bill Committee by January 15, 2005.

This 1.5-mile segment of Old County Road was classified as a local rural road based on the 1990 functional classification maps; however, the Delaware Department of Transportation (DelDOT) is in the process of upgrading the functional classification to an urban collector.

The study was initiated and a public workshop was held on December 16, 2004. Compiling data for the study included evaluating studies conducted by DelDOT, as well as field work to update known information and gather new findings. The study included a comprehensive set of seven transportation elements.

- **Roadway sufficiency:** Evaluation of pavement width, curvature, traffic controls, and other physical elements of the study corridor.
 - **Safety:** Comparison of accident rates along the corridor with average rates for similar roadways.
 - **Land use:** Review of future development and its anticipated effect on the transportation system.
 - **Traffic:** Analysis of current and future traffic volumes and severity of congestion.
 - **Bicycle facilities:** Determination of the adequacy of bike lanes, bike paths, signs, and pavement markings.
 - **Pedestrian facilities:** Evaluation of sidewalks, crosswalks, and pedestrian signals.
 - **Transit facilities:** Identification of existing transit facilities and the routes that serve them.
- The following is a summary of the study findings:
- The roadway has narrow travel lane widths that vary between ten and eleven feet with no shoulders.
 - There are several locations throughout the corridor that have obstacles close to the edge of the roadway, including utility poles, trees and roadside ditches.
 - There are two substandard horizontal curves within the study area.
 - Accident data indicated that the accident rate for this roadway is within a typical range for other collector roadways in New Castle County.
 - The existing annual average daily traffic (AADT) is approximately 3,200 vehicles and projected to increase to 5,800 vehicles by 2030.
 - There are no signalized intersections within the corridor and recent warrant studies indicate that none are needed.
 - Bicycle signing and markings are insufficient.
 - Except for a small section of sidewalk near the east end of the project limits, there are no pedestrian or transit facilities.
 - There were 82 attendees at the public workshop on December 16, 2004. Among the thirty written survey responses and verbal comments received, residents indicated a need for improvements in the following areas:
 1. Drainage
 2. Speeding
 3. Bicycle facilities
 4. Safety at Glasgow Avenue
 5. Turn lanes at subdivision entrances

Conclusions/Next steps

In conclusion the results of the study and public involvement indicate that the following items should be considered as part of the concept design alternatives.

- Widening to provide 11-foot travel lanes and 8-foot shoulders and improving geometry to meet design standards for a collector roadway
- Relocating utility poles and constructing gradual slopes adjacent to the roadway to improve “clear zone”
- Minimizing right of way impacts as much as possible
- Minimizing historic and environmental impacts, including wetlands and tree removal
- Installing sidewalks or a shared-use path along one side of the roadway
- Drainage improvements along the entire corridor
- Evaluating the need for turn lanes at subdivision entrances

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INTRODUCTION

Purpose

As part of a 20-Year Transportation Plan for the Route 40 Corridor, adopted in June 2000, sidewalks were recommended along Old County Road from Frazer Road to Glasgow Avenue. However, recent issues raised by local residents, civic associations and legislators have demonstrated the need for additional study along this segment of Old County Road.

Concerns brought to the local legislators led to the following resolution, which was part of the Bond Bill (HB #550) passed by the General Assembly in July 2004:

Due to increased traffic volume in Pencader Hundred with the resultant traffic congestion and public safety concerns, DelDOT shall initiate a study of Old County Road from Glasgow Avenue to Frazer Road. The study shall include ideas for potential alternatives for road improvements. A report shall be made to the Bond Bill Committee by January 15, 2005.

This study, undertaken by the Delaware Department of Transportation (DelDOT), addresses that requirement by:

- Evaluating existing conditions in the corridor
- Identifying committed improvements by DelDOT and others
- Recommending potential enhancements or the need for more detailed studies

Scope of the Study

The corridor extends along 1.5 miles of Old County Road from Frazer Road to Glasgow Avenue. This segment of roadway was classified as a local rural road according to the 1990 functional classification maps; however, based on the 2000 data, DelDOT is in the process of upgrading the functional classification to an urban collector. This will also provide regional connectivity because Old County Road, which extends into Maryland, was recently upgraded to a collector road by the Maryland State Highway Administration.

In summary, this study evaluates existing and future transportation conditions and identifies areas where the existing infrastructure is inadequate or needs to be enhanced to support transportation needs, both now and in the future. To address those needs, the study presents potential long-term transportation enhancements within the corridor.

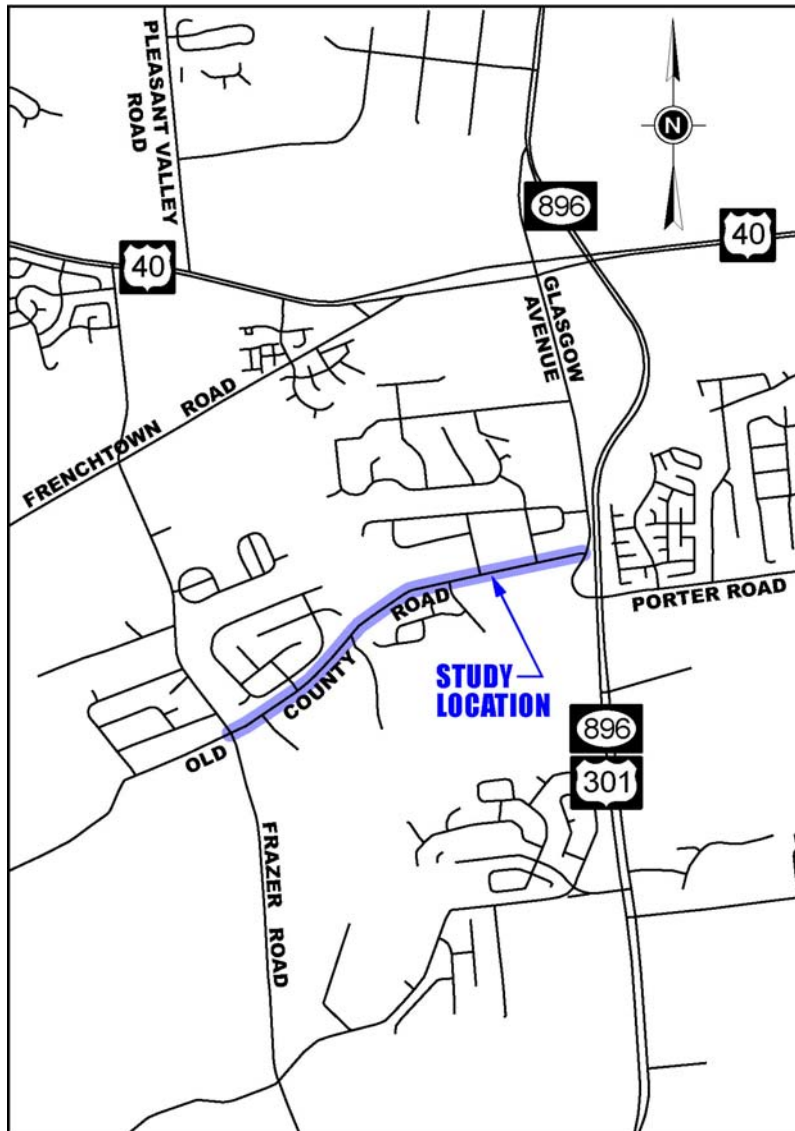


Figure 1: Study Location

CORRIDOR ASSESSMENT

Roadway Sufficiency

The following criteria were analyzed to determine the sufficiency of roadways in the study corridor.

- Design speed
- Cross section elements
- Pavement condition
- Traffic control devices
- Access
- Lighting
- Drainage

Within the corridor, Old County Road is proposed as an urban collector roadway and located within WILMAPCO's urbanized area. In accordance with DelDOT's *Road Design Manual*, the minimum design speed for an urban collector is 50 mph; the desirable design speed is 60 mph.

Cross section elements: Using the values noted, the required cross sectional elements were established in accordance with the *Road Design Manual* and AASHTO's *Policy on the Geometric Design of Highways and Streets*, 2001. Table 1 shows the desired and minimum values for specific cross section elements. The existing values shown in this table were obtained by performing approximate field measurements and by visual observation. A detailed field survey was not performed as a part of this study.

In general, the horizontal and vertical geometry is substandard based on current design standards as previously described. Upon completing an examination of mapping and field observations, the horizontal alignment of the roadway meets the minimum criteria for a design speed of 35 mph. This is based on an existing curve located approximately 2000 feet west of Bar Drive that has a radius of 500 feet and no curve warning signs. There is another substandard horizontal curve in the corridor located approximately 750 feet west of Bar Drive with a radius of 610 feet. However, there are warning signs posted on both approaches with a supplemental 35 mph speed advisory plaque.

The vertical alignment meets the minimum criteria for a design speed of 45 mph due to a vertical crest curve located approximately 560 feet west of Dolphin Drive. These values are not consistent with the recommended val-

ues for an urban collector roadway as provided in the publications listed above.

Design speed can be loosely defined as the safe speed at which a vehicle can operate based on the horizontal and vertical alignment of the roadway. The posted speed limit within the corridor is 40 mph. Typically, the posted speed limit is a minimum of five miles per hour greater than the posted speed limit unless there are supplemental warning signs with speed advisory plaques to indicate otherwise.



Eastbound along Old County Road approaching curve with 500-foot radius

Table 1. Existing Cross Section Elements.

Cross Section Element	Desired value	Minimum acceptable value	Approximate value provided
Passing sight distance	N/A	N/A	N/A
Stopping sight distance	570 feet	425 feet	Less than 400 feet
Minimum "K" value for vertical curvature	crest 151, sag 136	crest 84, sag 96	64* (crest)
Maximum degree of horizontal curvature	4 degrees, 15 minutes	6 degrees, 45 minutes	11 degrees 30 minutes (500-foot radius)
Lane width	12 feet	11 feet	10 feet
Shoulder width	10 feet	8 feet	No shoulders
Maximum % grade	5%	6%	Less than 5%
Maximum front slope (unprotected section)	6:1	4:1	2:1 or flatter*
Maximum back slope	6:1	0 to 5 feet – 4:1, 5 to 10 feet – 3:1	2:1 or flatter*
Width of clear zone	cut 14 to 26 feet, fill 26 to 38 feet	cut 12 to 18 feet, fill 16 to 24 feet	Less than 5 feet in some locations*

* - Based on general observations, not a detailed survey.

Pavement condition: The most recent road rating reports as provided by DelDOT's Pavement Management Section were used to document the sufficiency of the existing pavement within the study area. The pavement is constructed from hot mix asphalt and is generally in fair condition.

This section of Old County Road was last rehabilitated in 1995 and currently shows no significant signs of pavement failure. There are some locations of cracking and failure along the pavement edge at selected locations that appear to be the result of poor drainage and insufficient travel lane width. The pavement condition was reviewed by DelDOT in 2004 and

did not identify any pavement deficiencies that are sufficiently severe to warrant rehabilitation at this time.

Intersection Traffic Control Devices: The sufficiency of intersection traffic control devices is based on the *Manual on Uniform Traffic Control Devices* (MUTCD) and Chapter 3 of the *Road Design Manual*. There are six unsignalized intersections within the study area. Table 2 provides a summary of the intersections throughout the corridor. There were studies previously completed by the Department at the intersections of Frazer Road and Glasgow Avenue. However, the remaining four intersections have not been evaluated in detail.

Old County Road and Frazer Road



The intersection of Old County Road and Frazer Road operates under four-way stop control. There are single lane approaches in all directions with no shoulders or turn lanes. There is no existing lighting at the intersection. However, there are stop ahead warning signs with flashing yellow beacons and STOP

AHEAD striped on the pavement for the westbound Old County Road approach. The two Frazer Road approaches also have stop ahead warning signs. In response to safety concerns and reported accidents, a multi-way stop control warrant analysis was completed by DelDOT in December 2002 and the results indicated that four-way stop control was warranted. A resolution was signed on January 27, 2003 and the four-way stop control was installed in March 2003.

Old County Road and Glasgow Avenue



The intersection of Old County Road and Glasgow Avenue is a three-leg intersection with stop control for the single lane east-bound Old County Road approach. Along the northbound and southbound Glasgow Avenue approaches there is one through lane, a full shoulder and a northbound left

turn lane. There is enough pavement width at the intersection to allow east-bound right turns to bypass approximately three queued left-turn vehicles. There is a light pole with a single luminary on the northwest corner. The signing and pavement markings are sufficient. A multi-way stop control warrant analysis was completed at Glasgow Avenue in June 2004 and the results indicate that a multi-way stop is not warranted.

Table 2. Intersection Traffic Control Devices and Geometry.

Intersection	Subdivision / Cross Road	Traffic Control Device	Lighting	Through Lane Width (Ft.)	Turn Lane Width (Ft.)	Pass Lane Width (Ft.)	Shoulder Width (Ft.)
Old County Road and Frazer Road	Cross road	4-Way Stop	No	10.5	N/A	N/A	0
Old County Road and Farmington Avenue	Farmington	Stop sign	No	10.5	N/A	N/A	0
Old County Road and Bar Drive	Adams Run	Stop sign	No	12	N/A	N/A	0
Old County Road and Puffer Drive	Marabou Meadows	Stop sign	No	11	N/A	N/A	0
Old County Road and Dolphin Drive	Marabou Meadows	Stop sign	No	10.5	N/A	N/A	0
Old County Road and Glasgow Avenue	Cross road	Stop sign	Yes	10	N/A	N/A	0

Driveway access: The minimum criteria used to evaluate driveway access were established in accordance with the *Road Design Manual* and DelDOT's *Standards and Regulations for Access to State Highways*, or the "Entrance Manual." The study evaluated the following criteria for commercial driveways:

1. Sight distance
2. Location and geometry
3. Driveway density

There are 46 residential driveways, 19 along the south side and 27 along the north side within the corridor (see Figure 2 on page 6). The New Castle Conservation District office/maintenance facility is the only commercial development within the corridor and it has two entrances on the south side of Old County Road. One entrance is approximately 600 feet west of Glasgow Avenue. The second entrance forms the fourth leg of the intersection at Dolphin Drive, approximately 1,000 feet west of Glasgow Avenue. There is also a proposed development plan that includes a 6,000 square-foot fire station on the north side of Old County Road between Dolphin Drive and Puffer Drive. The plan proposes to construct a new entrance that is adjacent to the existing access, approximately 325 feet west of Dolphin Drive. There are sight distance restrictions at many of the residential entrances resulting from trees along the roadside, as well as vertical and horizontal geometry.



Looking west along the north side of Old County Road at residential entrance

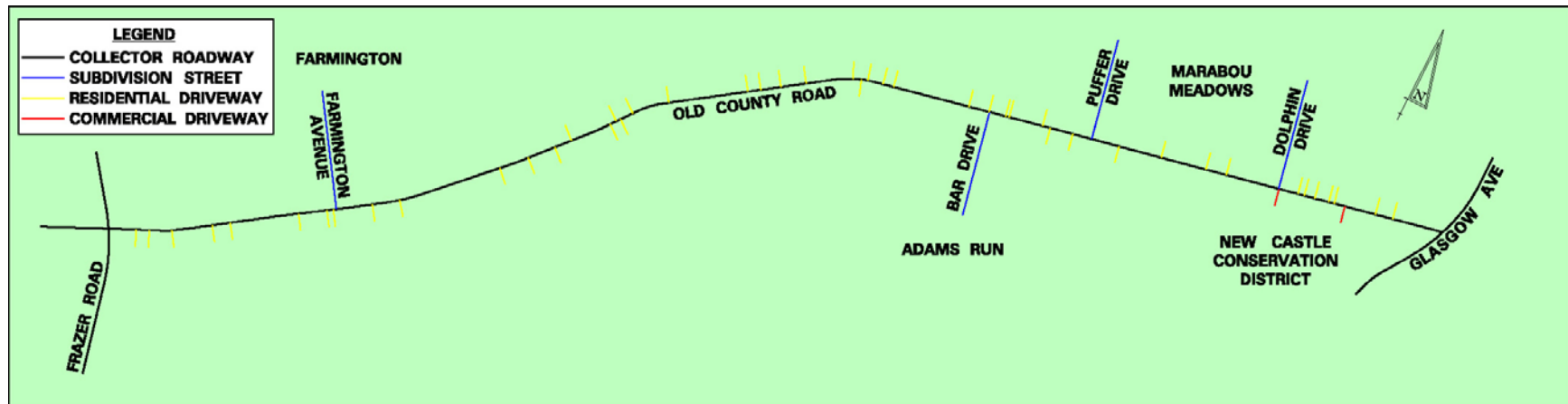


Figure 2: Driveway locations

Lighting: The standards used to determine the sufficiency of lighting within the study area were based on DelDOT's *Traffic Engineering and Management Signal Design Manual*, Appendix D, Lighting Policy. This policy states that lighting "shall" be provided at intersections of US routes with Delaware routes. The policy states that lighting "should" be provided at the following locations:

1. Intersections of Delaware routes with Delaware routes, and intersections of Delaware routes with unnumbered roads where the AADT exceeds 9,999 and the nighttime accident percentage is greater than 40 percent.
2. Intersections of Delaware routes with unnumbered roads where the AADT on the Delaware route exceeds 11,000 and the AADT on the unnumbered road exceeds 4,000.
3. Locations where accident patterns indicate that lighting should reduce accidents and the percentage of nighttime accidents is 40 percent or greater.
4. At residential development entrances where the internal streets are lighted and there are at least 75 homes.

The policy states that lighting "may" be provided at the following locations:

1. Intersections of Delaware routes with unnumbered roads where the traffic volumes are greater than 8,500 and 2,000 AADT respectively.
2. Locations where accident patterns indicate that lighting should reduce accidents and the percentage of nighttime accidents is 35 percent or greater.
3. Locations where better nighttime visibility is needed.
4. At residential development entrances where there are at least 100 homes.

The policy defines "shall" as requiring an installation; "should" as requiring consideration for an installation, and "may" as indicating that an installation is acceptable.

One of the six intersections in the study corridor has lighting installed, as noted in Table 2. Lighting is not provided at any other locations within the corridor. Based on the criteria listed above there are no apparent lighting deficiencies in the corridor.

Drainage: Drainage sufficiency was determined based on visual observations and available historic data. Hydraulic calculations and risk analyses were not performed as a part of this study.

A majority of the runoff from the roadway and adjacent areas drains into Long Creek, a tributary of the Elk River. Based on the existing mapping, Long Creek originates a few hundred feet north of the study area approximately two-thirds of a mile west of Glasgow Avenue. From there the runoff is conveyed through a 48-inch corrugated metal pipe (CMP) culvert located about 630 feet west of Bar Drive and travels southwest into Maryland. There is an additional 36-inch CMP culvert crossing approximately 900 feet west. This segment of Long Creek is characterized by a well-defined channel with steep side slopes, shallow longitudinal slopes and low velocities.



Looking south at Long Creek toward the upstream side of existing 48" CMP

Within the study area, the roadway has an open section design (no curbs) with roadside ditches to convey stormwater. Based on a visual examination, there are several locations where standing water remains in ditches and low-lying areas adjacent to the roadway following an average rainfall. There are no state owned stormwater management facilities designed to treat pavement runoff within the study area.

Drainage was a common theme among discussions with attendees at the workshop and completed surveys reviewed after the workshop. Many residents complained about poor drainage throughout the corridor and at their entrances.

Safety

Accident history is another important measure of roadway sufficiency. Overall, 12 accidents were reported in the corridor during the three-year period between September 2001 and August 2004. There were three injury accidents and no fatalities. Seven of the accidents were single vehicle accidents that involved a fixed object.

Accident rates are more valuable for comparison than total number of accidents. Average accident rate, or AART, is the measure of number of accidents per million vehicle miles traveled along a particular roadway. Comparing the accident rate for a roadway with the AART for similar roadways throughout the county or state provides a simple measure of the relative safety of that road.

For two-lane collector roadways, the AART for New Castle County is 3.03 for urban areas and 2.53 for rural areas. WILMAPCO's Urbanized Area Boundary, which defines the edge between urban and rural areas in New Castle County, encompasses the entire study corridor. The accident rate for the corridor, based on the accident data provided by DelDOT for the three-year study period, is 2.25.

Recent or Planned Safety Improvements

DelDOT's annual Highway Safety Improvement Program (HSIP) identifies 30 high-accident locations statewide for detailed study. There are no planned safety improvement projects along Old County Road and it has not been identified as part of the HSIP program at any time during the past ten years.

Land Use

Existing Land Use

The study corridor is surrounded primarily by residential development. The one commercial development is the New Castle Conservation District building on the south side of Old County Road near the intersection of Glasgow Avenue.

The study corridor is predominantly rural in character with several single-family residential parcels adjacent to the roadway, as well as open space and wooded areas. In addition to the 46 individual homes spread throughout the corridor, there are three subdivisions. Marabou Meadows is a 92-lot residential subdivision constructed in late 1960s with two points of access to Old County Road via Puffer Drive and Dolphin Drive and one point of access to Glasgow Avenue via Marlin Drive. Adams Run is a 75-lot subdivision with one point of access to Old County Road via Bar Drive. Farmington, which is currently under construction, is a 196-lot subdivision located in the northeast quadrant at the intersection of Frazer Road. Access to Farmington is provided along Farmington Avenue, which is approximately 1,350 feet east of Frazer Road.

Existing Zoning

New Castle County's *Unified Development Code (UDC)* defines 15 generalized zoning districts. Although the *UDC* permits mixed land uses in some districts, there is generally a predominant land use specified for each district. See Figure 3 for existing zoning within the study area.

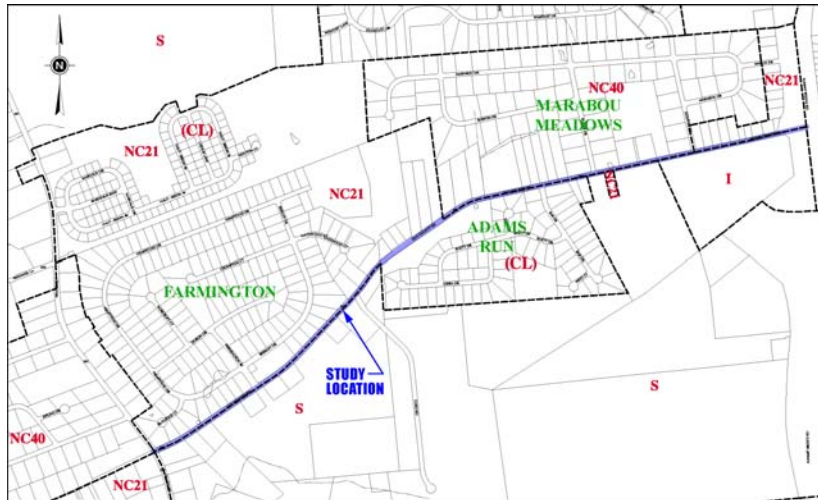


Figure 3: Zoning Map

Except for the New Castle Conservation District, which is zoned Industrial (I), the study corridor is zoned as Neighborhood Conservation (NC) or Suburban (S), which are described as follows:

Neighborhood Conservation - These districts protect the residential character of existing neighborhoods or planned subdivisions that were or are being developed under the previous zoning regulations. As development standards continue to evolve, these districts avoid making older developments non-conforming. These districts permit minor in-fill consistent with the existing character but shall not be used for rezoning. There are different types of neighborhoods which receive an NC designation. Distinctions between these neighborhoods are made by numbers or letters following the NC designation.

Suburban - This district permits a wide range of residential uses, including all the newly developing areas designed as growth areas in the *Comprehensive Development Plan*. Moderate to high density residential development is permitted in a manner consistent with providing a high quality suburban character. Significant areas of open space and/or landscaping are required to maintain the balance between green space and buildings that characterize suburban character. The highest densities are permitted in designed communities, hamlets and villages. This district is not intended to be used for fully developed areas.

Development Activity

There is one active development plan currently under review within the study corridor. The purpose of that plan is to subdivide an existing nine-acre parcel into two parcels and construct a 5,950 square foot fire station on one of the parcels. This plan has been submitted for exploratory review.

There are three other proposed development plans within close proximity to the study limits that may generate traffic entering the corridor. One plan, which is a 70-lot residential development called The Estates at Long Branch, is located along the north side of Old County Road approximately one mile west of Frazer Road. This location is significant because traffic attempting to access US 40 may continue eastbound along Old County Road to Glasgow Avenue to avoid congestion along US 40 between Frazer Road and SR 896. The second plan, which is a 100-lot, age-restricted residential community is located along the west side of Glasgow Avenue approximately one-half mile north of Old County Road. The third development is a 9,000 square foot childcare/learning facility located on a parcel adjacent to Cann Village.

As a development proposal is reviewed by New Castle County under the *UDC*, the developer must demonstrate the adequacy of public facilities,

such as roads and sewers, that will serve that development. Major development plans are subject to the traffic impact provisions of Article 11 of the *UDC* and DelDOT's *Rules and Regulations for Subdivision Streets*. These regulations require that the developer determine, subject to DelDOT and County review, the anticipated traffic impact due to the development and what improvements, if any, are required to alleviate that impact. This provision requires developers to either construct the necessary improvements or contribute their fair share of their cost.

Cultural and Environmental Resources

In conjunction with the field work conducted as part of this study, a preliminary assessment of cultural and environmental resources was completed. With early input on the identification of potential cultural resources, it will be easier to coordinate and confirm the presence or absence of cultural resources

Historical Resources

A preliminary cultural resource investigation and field analysis of the project area was completed to identify potential architectural and archeological historic resources. That research has demonstrated that there are nine properties along the study corridor that may be considered for additional study in reference to architectural significance.

There were also areas throughout the corridor that might be considered a potential archeological site (historic or pre-historic) worthy of testing due to the lower probability of land disturbance during its land improvement. Included among these areas are portions of the former Frenchtown Railroad right of way. Built 1832, it was one of the first railroads in the country and extended from New Castle to Frenchtown, Maryland on the Elk River. It was an important connecting link between the north and south and was absorbed by Delaware Railroad in 1856.

At the public workshop, a video of the study area from 1974 was on display to demonstrate that no transportation improvements have been made since that time, but a significant amount of land use change and development has occurred.

Environmental Resources

A preliminary wetland report was completed on December 17, 2004 as part of this study. The study corridor was inspected to identify and delineate the limits of Jurisdictional Wetlands and Waters of the U.S. Prior to initiating field studies, available data pertaining to the natural conditions in the field were collected and reviewed. Field inspections were performed on August 31, 2004. Nontidal wetland delineation studies were performed using the U.S. Army Corps of Engineers' 1987 *Wetlands Delineation Manual*. As established by this manual, the Routine On-site Determination Method was used to assess the site. The results indicate that six wetlands and three Waters of the U.S. (two of which are found on both the north and south side of Old County Road) were identified as a result of this investigation.

In addition, correspondence dated November 12, 2004 from the Department of Natural Resources and Environmental Control (DNREC), Division of Fish and Wildlife, Natural Heritage Program indicated that there are currently no records of state rare or federally listed species of plants, animals or natural communities within or near the study corridor.

Traffic

Existing Conditions

The existing traffic conditions evaluated for this project are based on published sources. AADT, or the annual average daily traffic on a highway segment, is published by DelDOT in its annual *Traffic Summary*. The most recent traffic data available indicates an AADT of approximately 3,200 vehicles. More detailed peak-hour turning movement volumes at Frazer Road and Glasgow Avenue were obtained from previous studies completed by the Department.

Both of these types of traffic data may be used to evaluate the level of congestion experienced by motorists. The qualitative measure used to describe congestion is "level of service," or "LOS," which can be measured in terms of speed, travel time, or delay. Levels of service can range from "A" (free-flow, uncongested condition) to "F" (stop-and-go condition). In developed areas, including the study corridor, Delaware has established LOS "D" as the limit of acceptable congestion.

LOS for roadway segments may be defined as the percentage of the roadway's capacity being used by traffic. The higher the ratio, the closer the roadway is to LOS F. In accordance with the *2000 Highway Capacity Manual* (HCM), there are two basic classifications, Class I and Class II, of

two-lane highways. Old County Road falls under the category of Class II as defined below:

***Class II** – These are two-lane highways on which motorists do not necessarily expect to travel at high speeds. Two-lane highways that function as access routes to Class I facilities serve as scenic or recreational routes that are not primary arterials, or pass through rugged terrain generally are assigned to Class II. Class II facilities most often serve relatively short trips, the beginning and ending portions of longer trips, or trips for which sightseeing plays a significant role.*

On Class II highways, mobility is less critical and the LOS is defined only in terms of percent time-spent-following. Based on the criteria described in Chapter 20 of the HCM and assuming a 50/50 directional split for the AADT of 3,200, Old County Road operates under LOS A.

Future Traffic

To estimate future traffic, DelDOT uses a travel demand model, a forecasting tool that uses anticipated growth in population and employment and determines its impact on travel patterns. For this study, DelDOT provided an estimated AADT for the year 2030. With a resulting future AADT of 5,800, Old County Road will continue to operate at LOS A in 2030.

Bicycle Facilities

Non-automobile travel has received greater attention nationwide since enactment of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and its successor, the Transportation Equity Act for the 21st Century (TEA-21). Delaware's standard governing implementation of bicycle facilities is DelDOT Policy Implement No. D-06, which states that "...the Department shall provide appropriate accommodations for bicyclists." Furthermore,

Items such as paving existing shoulders, minor widening around bypass lanes when right of way is available, and the addition of shoulders on bridge replacement projects are solutions that enhance cycling opportunities.... These items will be included in all System Preservation projects in "multi-modal" areas and on all roads classified as a minor arterial or above in "management" and "preservation" areas of the Long-Range Plan....

Because the study corridor falls entirely within a multi-modal transportation investment area there is a clear policy mandate for bicycle facilities to be a part of any future improvement in the corridor. Existing and planned development in the area have increased the demand for bicycle facilities and will continue to do so in the future. Furthermore, the White Clay Bicycle Club rides approximately three times per week along this segment of Old County Road with groups of 25 to 30 riders. At a minimum, continuous paved shoulders at least five feet wide should be provided throughout the corridor, as specified by DelDOT policy.

Pedestrian Facilities

DelDOT's stated policy regarding sidewalks may be found in Policy Implement No. O-02. Specifically,

The need for sidewalks in urban or suburban areas is most noticeable at points of community and urban development that result in pedestrian concentrations near or along the state's or municipality's transportation system. Such examples include: public/private transportation depots, local businesses, industrial receiving/distributing plants, corporate centers, shopping centers, malls, schools, medical centers, religious centers, hotels, or places of residence....

The Department's standard practice is to incorporate sidewalks into all roadway projects where their need is present or anticipated. Five-foot wide sidewalks are required, placed as far away from the roadway as practical. A buffer of at least three feet is typically provided between the roadway and the sidewalk; a larger buffer is important where curb is not present or high speeds are anticipated.



Looking west along the south side of Old County Road at existing sidewalk

With the exception of a 1000-foot segment of sidewalk along the south side for Old County Road adjacent to the New Castle Conservation District, there are no pedestrian facilities along the 1.5-mile study corridor. The lack of shoulders and flat, open space adjacent to the roadway provide no options for pedestrians along Old County Road. Where residential development exists, and particularly where it can easily be linked to schools, churches, and businesses, sidewalks should be provided. This is more evident on the east end of the study corridor where Glasgow Avenue provides access to these types of development to the north.

Transit Facilities

As in many suburban areas, providing transit service in the portion of New Castle County between US 40 and the Chesapeake and Delaware Canal is difficult. Sufficient ridership to justify investment in new transit routes is generally dependent on concentrations of retail centers, office complexes, and multi-family residential uses. According to Delaware Transit Corporation (DTC), subdivisions of single-family detached houses such as those found throughout the study corridor generally do not provide strong support for transit service. There is no existing transit service provided within the study corridor.

POTENTIAL ENHANCEMENTS

Previously Identified Improvements

Route 40 Plan

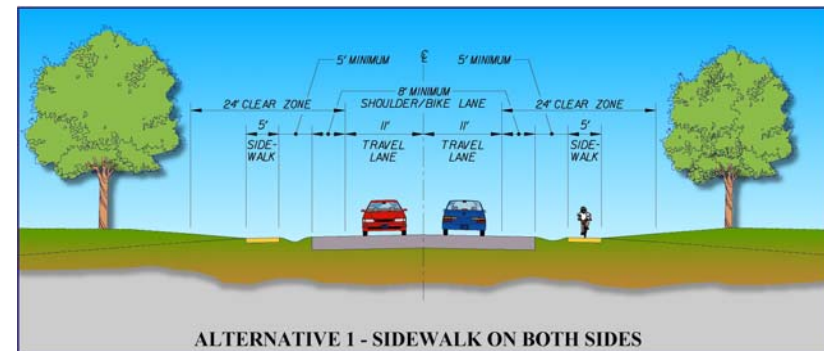
In June 2000, a Steering Committee, working with DelDOT, New Castle County, and WILMAPCO, adopted a 20-year plan for improvements to the US 40 corridor. That study area included this segment of Old County Road and the Plan recommended the construction of sidewalks along both sides of the roadway during Phase II (2008-2013).

Included in Phase I of the Plan is a “Main Street” study along Glasgow Avenue. The purpose of that study is to identify transportation and streetscape elements associated with Glasgow Avenue’s changing function from a through highway to a collector roadway as the “Main Street” of Glasgow. The study limits, which include the intersection at Old County Road, extend the entire length of Glasgow Avenue, from north of Muddy Run to the intersection at Porter Road.

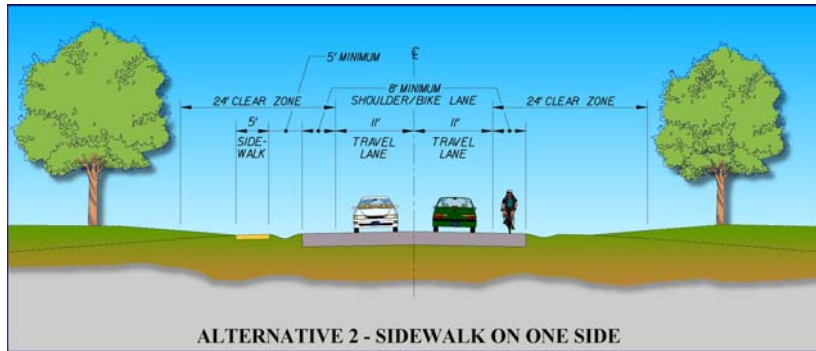
Public Involvement

As previously mentioned, this study was initiated as a result of concerns raised by local residents and legislators. Therefore, a public workshop was held on December 16, 2004 to present the existing conditions, traffic data and accident data obtained for this study as well as some potential improvement alternatives. The three alternatives were presented as typical sections and described below:

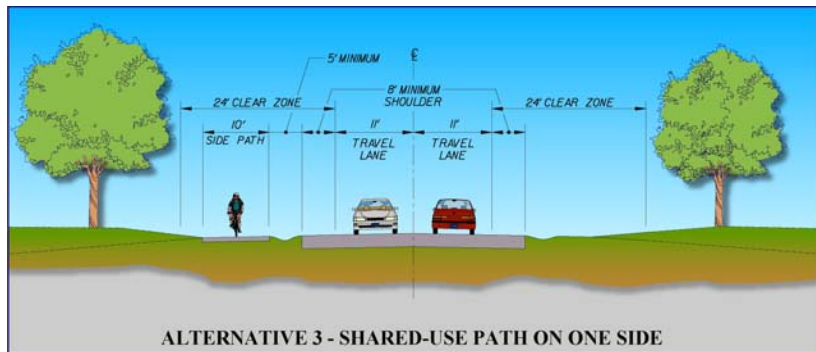
Alternative 1 - Sidewalks along both sides of the roadway and 8-foot shoulders/bike lanes.



Alternative 2 – Sidewalk along one side of the roadway with 8-foot shoulders/bike lanes.



Alternative 3 - A 10-foot asphalt, shared-use path along one side of the roadway with 8-foot shoulders.



There were a total of 82 attendees at the workshop and thirty completed surveys were received. Among the survey responses, four favored Alternative 1, eleven favored Alternative 2, twelve favored Alternative 3 and three had no comment. Figure 4 provides a graphical summary of the responses.

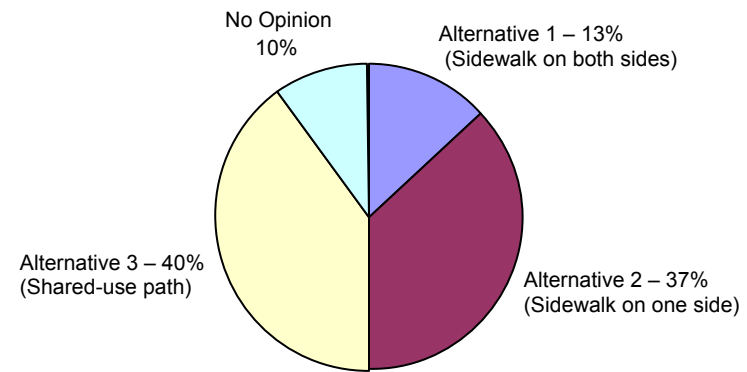


Figure 4: Survey Responses

The following list represents the major issues according to the remaining verbal and written comments received:

- Drainage
- Speeding
- Bicycle facilities
- Widening impact to trees and adjacent property
- Safety at the Glasgow Avenue intersection
- Improvements at subdivision entrances, including turn lanes

CONCLUSIONS/NEXT STEPS

Elements of Need

Based on the results of this study the following items represent areas of deficiencies under existing conditions.

- The horizontal and vertical geometry of Old County Road does not meet the minimum requirements for an urban collector roadway. This includes narrow travel lanes, no shoulders and substandard horizontal and vertical curves.

- There are several locations within the corridor where there is an insufficient clear zone in accordance for the requirements of an urban collector roadway.
- The lack of pedestrian and bicycle facilities is not consistent with the Investment Level 2 strategy as described in the *Delaware Strategies for State Policies and Spending*.
- The existing drainage along the roadway is insufficient.

Concept Design Issues

In conclusion the results of the study and public involvement indicate that the following items should be considered as part of the concept design alternatives.

- Widening to provide 11-foot travel lanes and 8-foot shoulders and improving geometry to meet design standards for a collector roadway
- Relocating utility poles and constructing gradual slopes adjacent to the roadway to improve “clear zone”
- Minimizing right of way impacts as much as possible
- Minimizing historic and environmental impacts, including wetlands and tree removal
- Installing sidewalks or a shared-use path along one side of the roadway
- Drainage improvements along the entire corridor
- Evaluating the need for turn lanes at subdivision entrances

Based on the concept alternatives, the total construction costs, excluding right of way, for these improvements may range between \$4 million and \$6 million. If the project continues into final design additional work will refine these costs.